Colorectal cancer screening in Australia

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Colorectal cancer is among the most common causes of cancer-related mortality. Between 1990 and 2013, global colorectal cancer-related mortality increased from 490 000 to 771 000 per annum.[1] Our failure to systematically reduce incidence and mortality is remarkable because colorectal cancer is more fitted for population screening and prevention than any other malignancy. It has a long preclinical stage with treatable precursors, adenomatous, and serrated polyps.[2] Polyp removal and treatment of early cancer improve disease outcome. The array of screening instruments continues to expand. The effect of screening on incidence and mortality has been extensively shown.[3] Screening can be cost saving due to high disease incidence, low costs of some screening methods, and high costs of treatment for advanced cancer.

The slow implementation of population screening in most countries relates to various issues that might differ per region.[4] Effective screening requires political support, provision of information to the target population, resources, training of health professionals, and quality assurance. Effective implementation of population screening that is optimally adapted to any local situation can thus take many years. In the Netherlands for instance, 16 years were needed from initial preparation of pilot studies in 2002 to completed roll-out of a national screening programme in 2018.[5] With many potential screening strategies, among others varying in primary screening method, age range, and screening interval, it is very difficult to evaluate all options in practice in any individual country. This underscores the value of decision models. These models simulate a population over time and allow assessment of the effect of different screening strategies.[6]

In *The Lancet Public Health*, Jie-Bin Lew and colleagues[7] modelled the future impact of the Australian colorectal cancer screening programme on disease incidence and mortality.[7] The programme consists of biennial faecal immunochemical testing (FIT) of 50–74 year-old participants followed by colonoscopy in case of a haemoglobin concentration higher than 20 µg/g in the faeces.[7] The programme started in 2006, with slow roll-out despite an incidence of colorectal cancer among the highest in the world. Single-round participation is now 39%, and 70% of screenees with a positive FIT receive further assessment.[8] The authors calculated that screening with 40% participation will prevent 92 200 cancer cases and 59 000 deaths until 2040, and is highly cost effective. The authors also modelled other scenarios at different levels of participation. The forecasts under different scenarios are helpful, not only for Australia but also for other countries contemplating such a programme.

Lew and colleagues' study[7] provides important support for the further roll-out and continuation of the programme. This is a key message for the Australian population, politicians, and health-care providers. Despite its preventive effect, the model predicts that screening at the current participation level will not bring the number of colorectal cancer diagnoses and deaths per annum below current numbers. This should stimulate Australian public health professionals to find means to increase participation, which currently is lower compared with other colorectal cancer screening programmes and internationally accepted targets.[9] Indeed, the USA aim for 80% screening coverage of the target population by 2018, while European guidelines recommend an uptake of at least 65%.[10]

The study findings should also stimulate to reduce the current 30% failure rate to assess individuals with a positive FIT.[8] Similar issues are encountered elsewhere, which underlines the relevance to share best practices.[4]

Apart from these strengths, the study also has some limitations. Decision models are based on a range of assumptions regarding progression of neoplasia, efficacy, and costs of treatment, and screening accuracy and impact. Realistic predictions thus ask for extensive validation of the model against data from long-term prospective randomised screening trials, like has been done for other models.[6,11] The decision model in this study seemed to lack this validation for the impact of screening.[7] The predictions that screening can reduce colorectal cancer incidence and mortality, as well as reduce costs, are widely supported. But the magnitude of effect might differ. The model used by Lew and colleagues[7] predicts that FIT screening with 60% participation might reduce overall colorectal cancer mortality with 40–45%, whereas available studies do not find a mortality reduction of more than 40% even if all eligible individuals in the population participate.[12]

Despite this limitation, we applaud Australia for monitoring and evaluating their cancer screening programme. These studies improve and optimise cancer screening,[5] yet they are nevertheless lacking in most countries. In an effort to build capacity for such monitoring and evaluation, the Horizon 2020 funded EU-TOPIA project was launched, which will provide countries across Europe access to validated web-based monitoring and modelling instruments.

For more on the **EU-TOPIA project** see eu-topia.org

In conclusion, Australia has high colorectal cancer incidence and mortality. The number of cancer cases and deaths would, without intervention, certainly further increase in the coming two decades. FIT screening can halt this increase, and save costs. It is therefore important that the roll-out of the FIT programme continues, and that measures are taken to increase its participation as well as assessment of screenees with a positive FIT. Policy makers and health-care providers should next look at additional interventions to further improve the impact of screening, for instance by lowering FIT cut-off.

Ernst J Kuipers, Iris Lansdorp-Vogelaar
Departments of Gastroenterology & Hepatology (EJK) and Public Health (IL-V), Erasmus MC University Medical Center, 3000 CA Rotterdam, The Netherlands
e.j.kuipers@erasmusmc.nl

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